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Dielectric characterization of  $\text{Cu}_x\text{S-Ni}_y\text{S}_z/\text{FNBR}$  and  $\text{CuS-Ni}_y\text{S}_z/\text{FNBR}$  nanocomposites

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**Dielectric characterization of  $\text{Cu}_x\text{S-Ni}_y\text{S}_z/\text{FNBR}$  and  $\text{CuS-Ni}_y\text{S}_z/\text{FNBR}$  nanocomposites**

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**ABSTRACT**

$\text{Cu}_x\text{S-Ni}_y\text{S}_z/\text{FNBR}$  and  $\text{CuS-Ni}_y\text{S}_z/\text{FNBR}$  nanocomposites (NCs) were prepared from  $\beta\text{-NiS}/\text{FNBR}$  by ion exchange method and dielectric characterized. Dielectric properties of NCs were investigated at the temperature of 26 to 120 °C in 120-10<sup>6</sup> Hz frequency range. With measuring electric capacity and resistance of the samples at different frequency we have studied the dielectric permittivity, dielectric loss tangent, dielectric modulus, conductivity, relaxation times and Cole-Cole plots were obtained. At 120 °C measurement temperature, some of the destruction processes in polymers affect to interfacial interaction between the polymer and particles surface. After high temperature measurement all three samples were cooled to room temperature and their dielectric measurements were carried out at room temperature. It is observed that at high measurement temperature some of carriers transfer from one energy level to another and the dipole orientation did not return completely to the previous situation.

**Keywords:** nanocomposites (NCs); nanoparticles (NPs); dielectric permittivity; Cole-Cole plots

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